

TRADE OPENNESS, HUMAN CAPITAL INVESTMENT AND ECONOMIC GROWTH IN NIGERIA

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ABSTRACT: *The study examined the impact of trade openness and human capital investment on economic growth in Nigeria from 1981 to 2020 and employed error correction mechanism for the analysis. Economic growth was proxied by nominal gross domestic product. Human capital investment was decomposed into government capital expenditure on education, government recurrent expenditure on education, government capital expenditure on health and government recurrent expenditure on health while trade openness was measured by trade openness index. Exchange rate was used as check variable. The study carried out descriptive statistics test, Augmented Dickey-Fuller unit root test, Johansen co-integration test and Error Correction Mechanism (ECM) technique for the analysis. The result revealed that capital component of government expenditure on health and education were negatively related to national output during the period of investigation. However, the recurrent component of government on both health and education as well as trade openness were positively related to economic growth for the period. The study recommended among others that Government should increase funding in education and health sectors to meet the 20% to 15% benchmark recommended by UNESCO and WHO respectively and adopt the private sector model of payment that is based on milestone achieved in capital projects in both sectors.*

KEYWORDS: human capital investment, trade openness, economic growth

INTRODUCTION

The world has become a global community such that countries depend on each other, no country can afford the cost of being isolated in the face of global integration. To benefit from globalization, countries formulate economic programmes and policies that will enable them achieve the benefits that globalization offers. Trade openness is part of such government policies and programmes aimed at tapping into the enormous benefits offered by foreign trade. Of course, the literature is flooded with supportive arguments on the positive linkages between trade openness and economic growth even though scholars opinion are divided based on their empirical findings (Heckerscher (1949), Kahnamoui (2013) and (Makhmutova and Mustafin, 2017). However, the benefits of trade openness have not been fully maximized by the Less Developed Countries (LDCs) as a result of trade protectionism (Iheanacho, 2017). Similarly, Balamoune-Lutz and Mavrotas (2006) in Matthew and Adegboye (2014) argued that trade openness has not promoted economic growth in Sub-Sahara Africa due to low level of investment in human capital which has resulted to weak institutions.

A number of studies have noted that trade openness affects economic growth through four channels namely, capital accumulation, equality of factor prices among countries, technology and knowledge transfers. They added that knowledge and technology transfers are the products of human capital investment (Borissov, Iacopetta and Klimenko, 2016). Openness to other countries through international trade increases the quality and quantity of human capital through knowledge transmission, innovative ideas, learning by doing which hitherto were lacking in these LDCs with the tendency of inducing specialization in production line which subsequently leads to economic growth (Grossman and Helpman, 1991).

In a similar development, human capital refers to the skills and abilities of human resource which advances through education, training and experience. Human capital investment equally implies the process of increased education and skills training of human resources (Blair, 2018). Several empirical studies have given credence to the potency of human capital investment as a vehicle for economic growth (Schultz, 1962), (Lucas 1988), (Rebelo, 1991) and (Teixeira, 2014). Therefore, the development of any given society calls for conscious human capital investment to stimulate economic growth.

In line with these assertions, successive governments in Nigeria have designed and implemented several policies measures aimed at stimulating economic growth. Some of these programs includes the Structural Adjustment Programme (SAP) in 1986, Trade and Financial Liberalization Policy (TFLP), Universal Primary Education (UPE) in 1976 and the launch of Universal Basic Education Programme (UBE) in 1999. Consequently, Nigeria has recorded impressive trade statistics and an astronomical increase in the number of health and educational institutions over the years. Yet the country is regarded as the country with the highest number of poor people on the face of the earth (Brooking Institute report in Kharas, hamel and Hofer, 2018). Similarly, available statistics shows that, Nigerian GDP contracted by 13.77% in the first quarter of 2019 over the previous quarter with an average growth rate of 1.05% from 2010 to 2019 (Trending Economics, 2019).

Perhaps, these may be the reasons why about 10.5 million children in Nigeria are without access to basic education (UNICEF, 2021). Nigeria has not been able to use its huge population size to its advantage. Consequently, large populations of Nigerians remain illiterate and unskilled and can not contribute significantly to economic growth. Why has improvement in trade openness not been able to reflect in human capital and why has improvement in trade openness and human capital not been able to impact positively on economic growth in Nigeria? It is against this backdrop that this study seeks to investigate the influence of trade openness and human capital investment on economic growth in Nigeria between 1981 and 2020. The remaining parts of the study are organized thus: section two deals with theoretical review, section three talks about empirical review, section four takes care of methodology of study finally section five discusses conclusion and policy recommendations.

LITERATURE REVIEW

Theoretical Review

Studies on international trade and human capital investment will naturally get their roots from the theories of trade and human capital. To this end, this study is anchored on the theory of absolute

advantage by Adams Smith and the new growth theory which was put forward by a number of scholars among them are the likes of Kenneth Arrow, Paul and Romer and Robert Lucas etc. The theory of absolute advantage was propounded by Adams Smith in 1776. The theory avows that countries should specialize in the production of goods which they have absolute advantage in its production. Adam Smith uses absolute advantage to refer to a country with production cost that is lesser than another. Adams Smith argue that the remaining cost should be used in free trade that will benefit both countries. This theory has been the bed rock on which international trade depends. However, the theory could not adequately address the human capital component of this investigation. To capture this component, the study has adopted the new growth theory which was put forward by a number of scholars who argue for the inclusion of endogenous factors in the neoclassical theory developed by Solow-Swan. To demonstrate the efficacy of the inclusion of endogenous factors in the model Grossman and Helpman came up with the fact that developing countries can benefit from trading with developed countries by tapping into their knowledge and technological development which have the potentials of growing the rate of accumulation of human and physical capital.

Empirical Review.

Sajid et al. (2021) examined the impact of trade openness, human capital, and institutional performance on economic growth. The study 47 Organization of Islamic Cooperation countries (IOC) from 1991 to 2021. The study adopted the dynamic common correlated effects for the analysis and found that positive relationship exist between the dependent and independent variables. The paper recommended that the IOC countries should continue to formulate polies that will stimulate trade openness and human capital formation.

Oyewole and Adegoke (2018) looked at human capital development in Nigeria and its implication for nation building using descriptive approach found that nation-building will be successful if the state experiences self-government for several years in the presences of a robust economy and recommended that Nigerian educational system should adopt rigorous academic standards and set a benchmarked against standards in developed countries as a strategic intervention that will positively affect the entire human capital development system in the country.

Okumoko et al. (2018) investigated the dynamics of human capital development and industrial growth in Nigeria between 1970 and 2016 that is a period of forty years using both descriptive and econometric approaches. The ADF procedures were employed to test for the properties of the variables. The result indicates that recurrent expenditure on education and health exhibited somewhat negative relationship with industrial growth during the period of investigation. The study recommended that government subsidy on importation of capital goods for development of the country's industrial sector should be sustained in order to stimulate economic growth

Arash and Parsa (2017) investigated effective factors on exports with emphasis on human capital formation in selected twenty developing countries using panel data analysis between 1995 and 2014. The findings of the study revealed that human capital and export were positively related in the twenty countries of study. Similarly, the work discovered that population, capital formation and healthcare costs variables exhibited positive and consequential effect on exports in the twenty countries investigated during the period.

Yasmin (2017) investigated the relationship between human capital inequality and globalization in 120 countries using panel regression model between 1970 and 2009. The study unveiled that developing countries do not certainly profit from globalization which is in disagreement with the standard trade theory and that globalization reduces the educational gap in less developing countries while it increase the gap in the more developed countries. The study recommended further findings for the validity and reliability of the standard H-O theory as it concerns the developing countries through isolating the low income from middle-income countries.

Umulkher and Muganda (2017) examined the impact of trade openness on economic growth in Kenya from 1970 to 2014. The study adopted the Ordinary Least Square (OLS) method and panel econometric techniques for data analysis and found that a positive and statistically significant relationship exist between trade openness and economic growth during the period of investigation. The study recommended that policy makers should quickly implement trade liberalization policies to put the economy at the fast lane of growth and increase the rate of investment in both physical and human capital to develop the Kenyan economy.

Keho (2017) established the link between trade openness and economic growth in Cote d'Ivoire from 1965 to 2014 using Autoregressive Distributed Lag bounds test to co integration and the Toda and Yamamoto Granger causality tests. The results showed that trade openness and capital formation exhibits positive relationship during the period of study and subsequently stimulates economic growth and development. The study finally recommended that Cote d'Ivoire should formulate polices that will reduce trade barriers, move from exporting raw materials and semi manufactured goods, to high value added goods encourage investment in human capital that have the tendency to utilize the ever increasing technologies that the more developed economies offers in cause of trade.

Iheanacho (2017) carried out an investigation using an ARDL Approach on trade liberalization and economic growth in the developing country, evidence from Nigeria between 1981 and 2014 using ARDL technique and discovered that the long run and short run results were at variant implying that the effect of trade liberalization on economic growth in Nigeria is yet to yoke the advantages of international trade in Nigeria during the period of investigation. The study recommended that policy makers should put into existent lively and aggressive sectors capable of engaging the ever increasing educated labour force to advance economic growth in Nigeria.

Ogunleye et al. (2017) critically examined human capital development and economic growth in Nigeria between 1981 and 2015. The work adopted the ordinary least square method and found that human capital variables such as secondary school enrolment, tertiary school enrolment, and total government expenditure on health and total government expenditure on education have positive relationship with economic growth in Nigeria during the period of investigation. On the other hand variables such as life expectance and primary school enrolment showed negative and insignificant relation with economic growth for the period. The study recommended that government in Nigeria should step up budgetary allocations to education and health and raised the standard of both secondary and tertiary education in the country to enhance human capital productivity.

Adenike and Sherifdeen (2017) studied human capital variables and economic growth in Nigeria: An interactive effect in Nigeria from 1986 to 2014 using time series data and adopted Fully Modified Ordinary Least Squares (FMOLS) technique. The study revealed that interactive effects of human capital components and growth in Nigeria were positively and significantly related. The work recommended that there should be increased in budgetary allocation to the health and educational sectors of the economy, motivate health personnel with increased pay and ensured high standard of education through retraining of teachers.

Jamilah et al. (2016) carried out a study on trade openness and economic growth: A Causality test in Panel perspective of 87 selected countries which are members of both Organizations for Economic Co-operation and Development (OECD) and developing countries between 1977 and 2011. The study decomposed trade openness into two measures namely exports plus imports divided by nominal GDP and import plus export divided by real GDP. The study found that there existed positive relationship between trade openness and economic growth which is consistent with economic theory. Thus the study concluded that an increase in trade openness will stimulate economic growth within the two sets of countries studied. .

Odo et al. (2016) conducted a study on the relationship between human capital development and economic growth in Nigeria from 1970 to 2013. The investigation adopted GDP as proxy for economic growth while total government expenditure on health care and educational infrastructures were used as proxies for human capital development. They employed ex-post facto research design to empirically carry out the study. The result revealed that government expenditure on health was negatively related to economic growth while total government expenditure on education had appositive relationship with economic growth and recommended that economic policies that will reduce workers' agitations should be implemented to enhance health workers productivity. Similarly, the health sector should be properly equipped to reduce medical tourism and capital flight.

Adeel et al. (2016) asked if there is a relationship among foreign direct investment, human capital, trade openness and economic growth of Pakistani economy. The study employed Johansen Co-integration test and VECM on times series data from 1980 to 2013. The study found that long run relationship exist among the variables of interest during the period of investigation and recommended that policy formulators in Pakistan should initiate policies that will induce FDI projects while promoting domestic exports. The study concluded that conscious efforts should be made to increase R&D actions to stimulate home-grown technological capability in the country.

Atif et al. (2015) investigated Trade liberalization, Human capital development and economic growth in selected Asian countries (India, Indonesia, Japan, Malaysia, Pakistan, Singapore, South Korea and Sri Lanka). They grouped India, Indonesia, Pakistan and Sri Lanka as low income countries while countries like Japan, Malaysia, Singapore and South Korea were grouped as high income countries. Using panel data analysis the study found that both the developed and developing countries enjoy growth led by trade for the period of investigation. Trade openness was found to be positively related to human capital for both groups but only significant for the developed countries as a result of well-trained human

capital. The study therefore recommended that trade openness should be encouraged by both developed and developing economies.

Jaiyeoba (2015) examined human capital investment and economic growth in Nigeria from 1982 to 2011 using both trend and empirical approaches on time series data. The investigation revealed that government expenditure on education, health care and economic growths were positively related during the period of investigation. The study recommended that for Nigeria to break out of the vicious cycle of poverty the government must put in place deliberate policy measures that will stimulate investment in education and health care.

Mirajul and Muhammad (2014) investigated the contribution of international trade to economic growth through human capital accumulation: Evidence from nine Asian countries between 1972 and 2012 using panel data analysis approach. The study unveiled that international trade stimulates human capital accumulation which induces economic growth in the countries of interest and recommended that less developed countries should implement positive economic policies that will stimulate trade liberalization to achieve economic growth.

Godstime and Uchechi (2014) examined human capital development and economic growth: The Nigeria experience. The study adopted empirical analysis on quarterly time series data from 1999 to 2012 and discovered that human capital development and national output level are positively and significantly correlated. The work recommended that human capacity should be enhanced through increase educational funding at all levels of governance.

Olatunji et al. (2014) investigated human capital investment and economic development: The Nigerian experience. Using the ordinary least square method on time series data obtained from the Central Bank of Nigeria's Statistical Bulletin from 1970 to 2011. The finding revealed a negative correction between human capital investment and economic development in Nigeria during the period of investigation and recommended education beyond secondary school enrolment to achieved economic development.

Ahmet (2014) studied long-term impact of human capital investment on gross domestic product for a total of twenty four countries out of which thirteen were developed and eleven were developing countries covering a period of forty years (1970-2010). The study disaggregated human capital into educational expenditures and life expectancy at birth and adopted co integrated panel regression models which includes panels Dynamic Ordinary Least Squares (DOLS) and Fully Modified Ordinary Least Squares (FMOLS) as it method for analysis. The founding of the study indicated that the impact of life expectancy at birth on GDP is determined as higher in the developing countries than the developed countries.

Majid and Behzad (2013) examined the impact of trade openness and human capital on economic growth in India between 1980 and 2011. Using the ordinary least square method, the study established that there exist a positive relationship among trade, human capital and economic growth in India during the period of investigation. The work recommended that the authorities in India should continue to promote

international trade since it brings about stability and certainty in the market and subsequently the highest economic growth in India has been high within the period of trade liberalization.

Evaluation of Literature Reviewed

At the end of the literature review, the study found that no previous work known to this study investigated the combined impact of trade openness and human capital investment on economic growth in Nigeria. For instance, Majid and Behzad (2013) examined the impact of trade openness and human capital on economic growth in India between 1980 and 2011, Zaki (2018) carried out a study on the impact of trade openness, investment and human capital formation on economic growth of Pakistan from 1980 to 2012, Tsaurai (2017) investigated the relationship among trade openness, human capital development and economic growth in selected emerging markets (Colombia, India and Greece) and Atif et al. (2015) investigated Trade liberalization, Human capital development and economic growth in selected Asian countries (India, Indonesia, Japan, Malaysia, Pakistan, Singapore, South Korea and Sri Lanka). Therefore, by localizing the study in Nigeria, its findings will contribute greatly in bridging the existing gaps in literature.

METHODOLOGY

The times series data for the present study were mainly sourced from the Central bank of Nigeria Statistical Bulletin (various issues). The method of study is empirical in nature where an econometric approach which involves unit root test, Johnson co-integration test and Error Correction Mechanism (ECM) were employed to examine the influence of trade openness and human capital investment on economic growth in Nigeria from 1981 to 2020.

Model Specifications

This study adopts the augmented Solow model developed by Mankiw et al. (1992) which incorporates the human capital component into their model and is specified thus:

$$Y_t = A_t * K_t^a * L_t^y * H_t^b \quad (1).$$

Where: Y_t = Economic growth rate, H_t = Human capital, A_t = Level of technological progress, L_t = Labour force, K_t = Gross capital formation and t = Time. But mimic the work of Jadoon et al. (2015) which adopted the above model but incorporated the trade openness component as specified thus:

$$Y_{it} = f(K_{it}, L_{it}, HC_{it}, OP_{it}) \quad (2).$$

With slight modifications the model for study is specified thus:

$$NGDP = f(GREE, GCEE, GREH, GCEH, TOP, EXR) \quad (3)$$

Where:

GREE= Government Recurrent Expenditure on Education

GCEE= Government Capital Expenditure on Education

GREH= Government Recurrent Expenditure on Health

GCEH= Government Capital Expenditure on Health

TOP= trade Openness

EXR= Exchange Rate

NGDP= Nominal Gross Domestic Product

The econometric form of model was stated as follows

$$RGDP = \alpha_0 + \alpha_1 GREE + \alpha_2 GCEE + \alpha_3 GREH + \alpha_4 GCEH + \alpha_5 TOP + \alpha_6 EXR + \mu t \quad (4)$$

Where:

GREE, GCEE, GREH, GCEH, TOP, NGDP and EXR are as earlier defined

μt = Error term

α_0 = constant parameter,

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6$, = Estimation parameters.

On a priori: $\alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 > 0, \alpha_5 > 0$, and $\alpha_6 < 0$

IV Results and Discussion

Descriptive Statistic

The descriptive statistics of the variables in-cooperated into the study are carried out in this section.

Table 1: Descriptive Statistics Result

	NGDP	GCEE	GREE	GCEH	GREH	TOP	EXR
Mean	35482.94	21.12083	126.1588	22.32609	74.93797	31.98008	100.8735
Median	24477.91	9.872100	50.78365	8.586400	20.58052	33.38961	107.0243
Maximum	69810.02	87.90000	465.3011	97.20000	296.4428	53.27796	358.8343
Minimum	13779.26	0.087600	0.162154	0.034600	0.041315	9.135846	0.610025
Std. Dev.	20587.70	23.61530	156.5853	27.65243	97.83001	12.29971	100.7620
Skewness	0.597321	0.933674	0.950304	1.274774	1.023565	-0.293481	0.885394
Kurtosis	1.742633	2.987486	2.293362	3.826948	2.467142	2.233347	2.987758
Jarque-Bera	5.013570	5.811905	6.852741	11.97340	7.457805	1.553800	5.226394
Probability	0.081530	0.054697	0.032505	0.002512	0.024019	0.459829	0.073300
Sum	1419317.	844.8331	5046.353	893.0436	2997.519	1279.203	4034.942
Sum Sq. Dev.	1.65E+10	21749.61	956239.4	29821.61	373257.8	5900.034	395966.0
Observations	40	40	40	40	40	40	40

Source: Computer output E-view 9.

From the descriptive statistics in table 1 above, NGDP has a mean of 35482.94, a middle value of 24477.91, a maximum value of 69810.02, a standard deviation value of 20587.70. NGDP mirrors a normal distribution since it presents a skewness of 0.597321. It is leptokurtic which implies that NGDP

will have long right tail. It has a Jarque-Bera statistic of 5.013570 with its associated probability value of 0.081530 which is clearly not significant at 0.05 percent; this confirmed that NGDP is a normal distribution. GCEE exhibits a mean value of 21.12083, maximum and minimum values of 87.90000 and 0.087600 respectively. It has a standard deviation value of 23.61530 and a skewness value of 0.933674. It mirrors a normal distribution since it exhibits a skewness value of 0.933674 but it is above the skewness value of zero for normal distribution. It is leptokurtic in nature, it has a kurtosis value of 2.987486 which is slightly below a mesokurtic value of 3, the Jarque-Bera statistic is 5.811905 and its probability value is 0.054697 which is not significant at 5 percent significant level. This affirms that GCEE is not a normal distribution.

GREE has an average mean value of 126.1588 with an outlier of 465.3011, a minimum value of 0.162154; its standard deviation is 156.5853 and a skewness value of 0.950304 with a Jarque-Bera statistics of 6.852741 with its associated probability value of 0.032505. GREE mirrors a normal distribution but it is leptokurtic with a long right tail. It has a kurtosis value of 2.293362 which a little below the mesokurtic value of 3 for normal distribution. Since GREE has a probability of 0.032505 which is statistically significant at 0.05 it is clearly an abnormal distribution.

GCEH has an average mean value of 22.32609, a maximum value of 97.20000 with its minimum value of 0.034600; it has a standard deviation value of 27.65243. It exhibits a skewness value of 1.274774 and a kurtosis value of 3.826948 which is above the mesokurtic value of 3 for normal distribution. The Jarque-Bera statistics of 11.97340 and its probability value of 0.002512 which is significant at 5 percent, clearly GCEH is not a normal distribution.

Similarly, GREH displayed an average mean value of 74.93797, a maximum value of 296.4428 and a minimum value of 0.041315. It has a standard deviation value of 97.83001 a skewed value of 1.023565 which is way off a skewness value of zero for normal distribution. It has a kurtosis value of 2.467142 which is equally below the mesokurtic value of 3 for a distribution to be regarded as normal. The Jarque-Bera statistical is 7.457805 and its associated probability value is 0.024019 which is statistically significant at 5 percent confidence level. Therefore, GREH is not a normal distribution. TOP has a mean value of 31.98008, a maximum value of 53.27796 and a minimum of 9.135846. Its standard deviation is 12.29971 with a skewness value of -0.293481. TOP mirrors a normal distribution but it is playkurtic in nature with many lower values than the sample mean. This implies a long left tail. The Jarque-Bera statistics for TOP is 1.553800 and its associated probability value is 0.459829 which is not significant at 5 percent confidence level of significant clearly TOP is a normal distribution. EXR exhibited a mean value of 100.8735, minimum and maximum values of 0.610025 and 358.8343 with a standard deviation of 100.7620 and it is skewed by about 0.885394 thus TOP mirrors a normal distribution. However, the kurtosis value is 2.987758 is slightly below a mesokurtic value of 3 for a normal distribution. The Jarque-Bera statistics value is 5.226394 with its associated probability of 0.073300 which is not significant at 0.05 percent confirmed that TOP is a normal distribution.

Unit Root Test

Unit root test is performed in this subsection using Augmented Dickey-Fuller unit root test to determine the order of their integration.

Table 2: Unit Root Test Result

Variables	Level 1(0)	1 st difference 1(1)	Order of integration
LOG NGDP	-0.027819	-3.395053	1(1)
LOG GREE	-2.117123	-7.672580	1(1)
LOG GCEE	-0.579912	-8.987351	1(1)
LOG GREH	-1.483059	-9.991417	1(1)
*LOG GCEH	-0.645087	-9.212359	1(1)
LOG EXR	-2.017126	-5.164911	1(1)
TOP	-2.276885	-7.346672	1(1)
	Critical Value	Critical Value	
	-2.945842	-2.954021	

Source: Computer output E-views 9.

Note: The unit root test is at 5 percent level of significance

The critical values are -2.945842 and -2.954021

The summary of result obtained from the unit root test above revealed that all the variables incorporated into both models were integrated of order one. This necessitated the use of Johansen co-integration test, to ascertain if long-run relationship exists among the variables.

Johansen Co-integration Test

Having observed that all the variables in the model are integrated of order one; the study therefore adopted the Johansen co-integration technique to determine if long run relationship existed either between or among the series in the model.

Table 3: Johansen Co-integration test results

Johansen-Juselius Cointegration Test Result:

Unrestricted Co-integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.677281	136.0278	125.6154	0.0099
At most 1	0.620459	95.31276	95.75366	0.0536
At most 2	0.521647	60.43622	69.81889	0.2222
At most 3	0.341032	33.88962	47.85613	0.5079
At most 4	0.239177	18.87474	29.79707	0.5020
At most 5	0.180549	9.033963	15.49471	0.3622
At most 6	0.050503	1.865622	3.841466	0.1720

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Co-integration Rank Test (Maximum Eigen value)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.677281	40.71506	46.23142	0.1731
At most 1	0.620459	34.87654	40.07757	0.1717
At most 2	0.521647	26.54660	33.87687	0.2884
At most 3	0.341032	15.01488	27.58434	0.7470
At most 4	0.239177	9.840779	21.13162	0.7594
At most 5	0.180549	7.168341	14.26460	0.4694
At most 6	0.050503	1.865622	3.841466	0.1720

Max-eigenvalue test indicates no cointegration at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Computer output E-views 9.

The result above, the trace statistic reveals the existence of one co integrating equation in the model given the trace statistics of 136.028 which is greater than the critical value of 125.6154 at 5 percent. Since the Johansen co-integration test has indicated at least one co-integrating equation between and among the series. The study advanced to estimate an Error Correction Mechanism (ECM).

Table 4: Parsimonious Result for model one

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.029699	0.008105	3.664336	0.0011
DLOG(RGDP(-1))	0.433561	0.116232	3.730145	0.0009
DLOG(GCEE(-1))	-0.009640	0.009006	-1.070338	0.2943
DLOG(GREE)	0.012690	0.006684	1.898450	0.0688
DLOG(GCEH(-1))	-0.008729	0.008705	-1.002803	0.3252
DLOG(GREH(-2))	0.005516	0.006019	0.916438	0.3679
D(TOP(-1))	0.001103	0.000587	1.879746	0.0714
DLOG(EXR)	-0.026205	0.016821	-1.557874	0.1314
ECM(-1)	-0.091379	0.030827	-2.964203	0.0064
R² 0.565847; Adj. R² 0.432261; F-st.0.002335; W.D 2.018393				

Source: Computer output E-view 9.

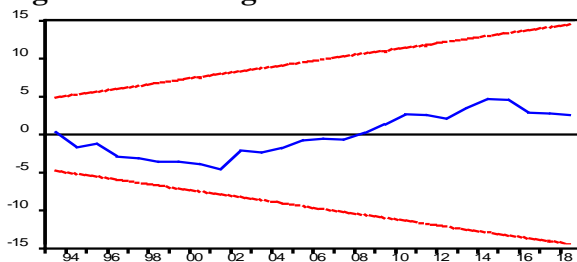
The ECM result above shows that, the regressors explained about 43 percent of the systemic variation in economic growth during the period of investigation ceteris paribus. The remaining 57 percent of the variation in economic growth in Nigeria are explained by variables not included in the model. The Durbin-Watson test statistics of 2.018393 suggests the absence of autocorrelation among the variables. Fisher's statistics was significant at one percent significant level given its probability value of about 0.0023. This implies the rejection of the hypothesis of no significant relationship between economic growth (regressand) and its regressors. Finally, the Error Correction Mechanism (ECM) coefficient was

rightly signed and significant at 5 percent given its probability value of 0.0064 with a speed of adjustment of about 9.14 Percent which is corrected in the next period.

GCEE and GCEH exhibited negative relationships with economic growth given their respective coefficients of -0.0096 and -0.0087. Similarly, they were not statistically significant at 5% given their respective probability values of 0.27 and 0.33, a percentage increase in GCEE and GCEH will ultimately results in about 0.96% and 0.87% contraction in national output in Nigeria during the same period. This result negates economic theory but clearly reveals that government capital expenditure on education and health in Nigeria are grossly inadequate.

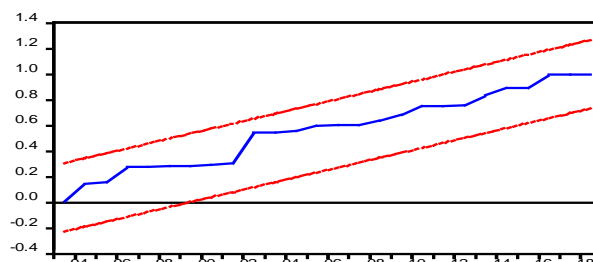
On the other hand, GREE and GREH were positively related to economic growth given their respective coefficients of 0.013 and 0.0055 at 5% significant level respectively. Thus a percentage increase in GREE and GREH will result in only about 1.3 % and 0.6% expansion in national output respectively. The results of GREE and GREH were not statistically significant at the same 5% level given their respective probability values of 0.069 and 0.37. The insignificant level of these results reveals that government recurrent expenditure on teachers and health care givers in Nigeria are adequate but lack motivation. Similarly, TOP exhibited a positive coefficient of about 0.0011 which is line with economic theory but displayed an insignificant probability value of about 0.071 at 5% significant level. This result shows that TOP and national output are positively related. Thus a percentage increase in TOP will stimulate economic growth by 0.11 percent. The positive outlook of the relationship between TOP and national output, points to the fact that TOP has the capacity to trigger economic growth in Nigeria ceteris paribus. The check variable (EXR) exhibited a negative relationship national output. This is in line with economic theory that at lower exchange rate more foreign exchange will be sort after by businesses concerns.

Diagnostic checking



Cumulative Sum (CUSUM)

Source: Computer output E-view 9



Cumulative Sum of Squares

Source: Computer output E-view 9

Finally, the Cumulative sum (CUSUM) and cumulative sum of squares graphs above shows that the economic growth model did not suffer from any major policy shock as the two graphs falls within the 5 percent critical bound indicating stability in the long-run coefficients of the regressors.

CONCLUSION AND RECOMMENDATIONS

This study examined trade openness, human capital investment and economic growth in Nigeria between 1981 and 2020. NGDP was used as proxy for economic growth (dependent variable), TOP was used to measure trade openness while human capital investment was decomposed into GREE, GCEE, GREH and GCEH (independent variables). The study carried out an indebt descriptive analysis on the series in the model, adopted the Johansen' s co-integration approach to determine if there exist long run relationship among the variables incorporated into the study and equally did the ECM to achieve the study objectives. The study found that GCEE and GCEH had a negative relationship with economic growth whereas GREE, GREH and TOP were positively related to economic growth. GREE, GREH, GCEE, GCEH and TOP were not statistically significant at 5% confidence level which suggests that government expenditure on health and education is grossly inadequate to induce any significant impact on the economy.

The study recommends that Government should ensure prudent utilization of funds allocated to capital projects in education and health through proper monitoring and evaluation. Payments for projects executed in both education and health sectors should be based on milestones achieved as it is done in the private sector. Similarly, there is the need for government to increase funding in both education and health sectors to meet the 15 to 20 percent benchmark recommended by UNESCO for education and 15 percent recommended by WHO for the health sector respectively. Finally, government should ensure regular payment of teachers and health care givers salaries, regular promotions and other welfare packages to serve as motivation for optimal performance. These have the capability of making GREE and GREH contributes significantly to economic growth in Nigeria.

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